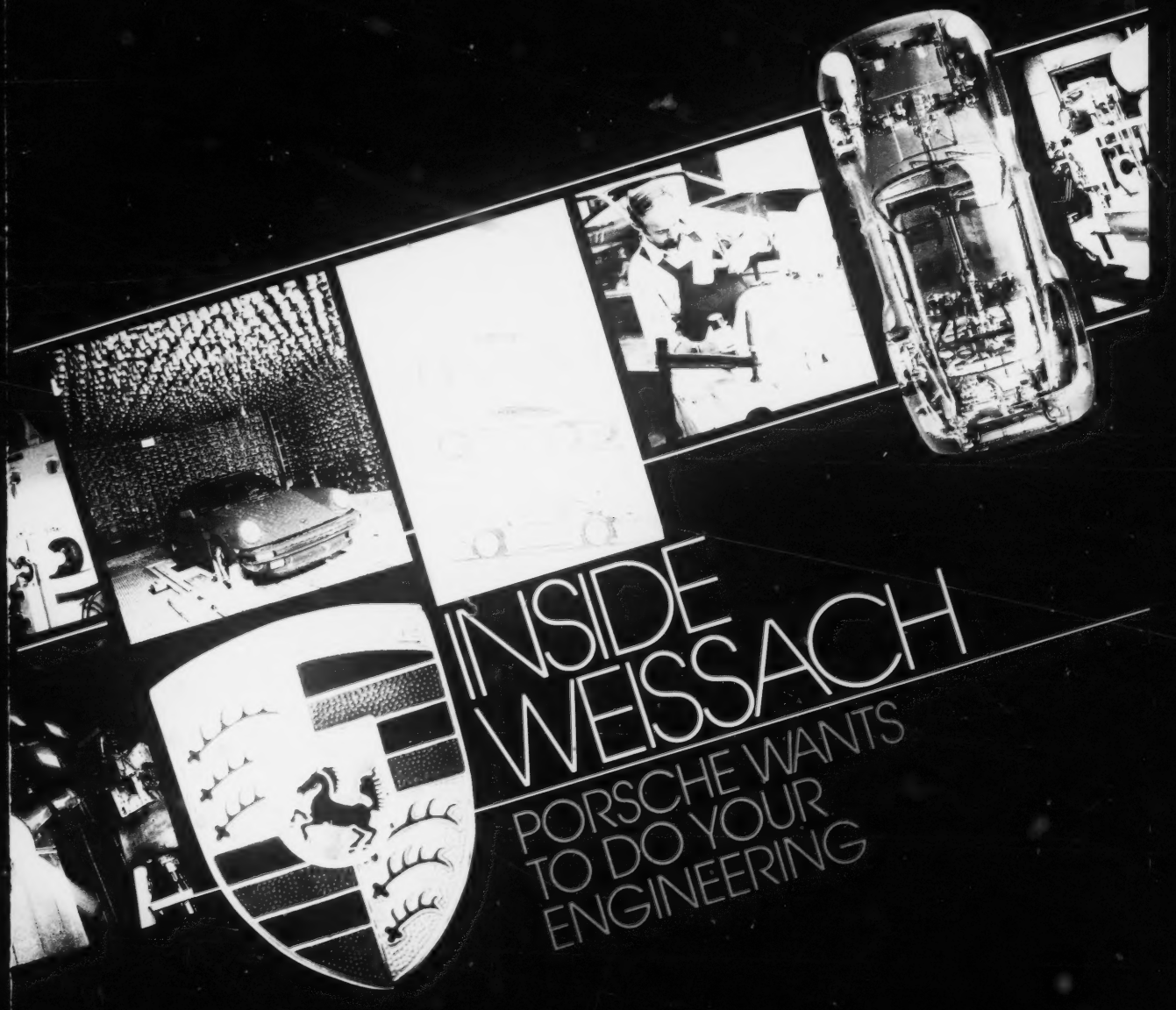
CHILTON'S
DECEMBER 1988

AUTOMOTIVE INDUSTRIES

SINCE 1895

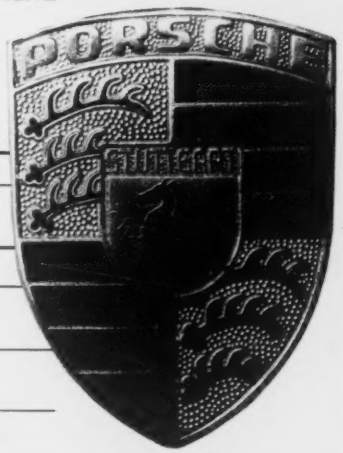


INSIDE WEISSACH

PORSCHE WANTS TO DO YOUR ENGINEERING

DECEMBER 1988 VOLUME 168, No.12

CHILTON'S AUTOMOTIVE INDUSTRIES SINCE 1895



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AUTOMOTIVE INDUSTRIES (ISSN 0273-656x) magazine is published monthly by Chilton Co., Chilton Way, Radnor, PA 19089. Chilton Company is a division of Capital Cities/ABC, Inc., New York, NY. Subscription rates: 1 yr. $39.95 US, $79.95 foreign. Phone (215) 964-4152. Second Class Postage paid at Wayne, PA 19087 and additional mailing offices. POSTMASTER: Send address changes to AUTOMOTIVE INDUSTRIES, Circulation Dept., Chilton Way, Radnor, PA 19089. © Chilton Company, 1988. Permission to photocopy for internal use or the internal use of specific clients is granted by Chilton Company for libraries and other users registered with the Copyright Clearance Center (CCC), provided that a base fee of $1.00 per copy of the article, plus 25¢ per page is paid to the CCC, 21 Congress St., Salem, MA 01970. Address special requests to The Editor. (0273-656x/85 $1.00 + 25¢)

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It's A Start

American cars have never represented big numbers in Japan, but it looks like the Accord Coupe could help to change all that. The car was an instant success when introduced in Japan and is the primary reason for the dramatic changes in **US-built car registrations**. Has Honda broken the ice?

NEW REGISTRATIONS OF IMPORTED CARS TO JAPAN

	Aug. '88	Aug. '87	% Increase
USA	981	283	246.6
UK	738	538	37.2
W. Germany	6784	5608	21.0
France	529	401	31.9
Italy	371	322	15.2
Sweden	533	367	45.2
Others	23	13	76.9
TOTAL	9959	7532	32.2

Subaru's News

Used to be that when you bought a Subaru, you only had to say: wagon, sedan or coupe. But now, in addition to the XT and Justy, Subaru is bringing out a **new line of Accord/Camry fighters** (April '89) and a new name to go with them. The line will be called "Legacy" and it will be available in upscale four-door sedans and station wagons. These cars will be offered in addition to the current line of sedans, wagons and coupes, but just so that there is no confusion, Subaru has decided to give its bread-and-butter line a name too. These cars will be named "Loyale," which, according to marketing VP David L. Sippel, "...not only reflects the way Subaru owners feel about their cars, but it also signals a renewed marketing effort for our highest-volume, high-value models."

Sittin' Pretty

Lear Siegler Seating Corp. currently enjoys a 38% share of the domestic seating market. And they intend to keep it. LSSC is working on projects that will advance the current state-of-the-seating-art to include: **active seats**—which will adjust bolsters as you drive; **reversible seat** cushions—much like you have on your sofa—for added wear, **conformable seats**—that make all adjustments automatically and even **voice-activated seats**—for the man who has everything.

A little further down the road, we may see temperature-controlled, **gel-filled seats**. This concept would use a shock-absorbing gel—similar to that used in some athletic applications—in place of the seat suspension. Another definite maybe is a one-piece, **plastic seat** frame, that would create a built-in suspension, by cutting cantilever slots in the cushion area. Early tests show that this seat is feasible and would save both weight and cost.

Transplant Suppliers Disappointed

Of the Japanese OEM component suppliers which have set up shop in the US, 40% are disappointed with the American market. According to a recent study by management consultants A.T. Kearney, the transplant suppliers realize that business with only the Japanese automakers now operating in the US is not enough to support their capital investments. To these companies, Kearney recommends strategies such as **cracking the Detroit market** *via* joint-ventures with US suppliers, exporting US-made components back to Japan or to Europe and becoming a source for technology and products unavailable from the Big Three. Of the joint-venture strategy, Kearney suggests the Japanese pick their partners very carefully, to find the best ones for mutual market potential.

Say Watt?

The marriage of Delco/Bose has provided sweet sounds in many of GM's higher content models, but Cadillac felt that exclusive cars deserved exclusive sound systems. Delco Electronics was happy to oblige and has just introduced the **Delco/Bose Gold music system**. The "gold" option puts 200 watts of power into the De Ville and Fleetwood models and a full 170 watts into Seville and Eldorado. Controlling all this power are standard auto-reverse cassette with Dolby; optional CD player or a Digital Audio Tape (DAT) player.

TOP SUPPLIERS 1988

Automotive Industries' exclusive alphabetical listing of the industry's top OEMs.

COMPANY	1985 SALES*/PROFIT	1986 SALES*/PROFIT	1987 SALES*/PROFIT
AC-Spark Plug (GM)	NA	NA	NA
Accustar (Chrysler)	NA	NA	NA
Acme-Cleveland	213/4.6	186/(1.8)	176/11.3
Airpax Corp.	NA	NA	NA
Akzo	NA	NA	NA
Alcoa	6,684/(16.6)	6,505/254	7,838/200
Allied Corp.	8,183/(279)	9,888/605	11,116/656
AMP	1,636/108	1,933/164	2,317/250
A.O. Smith	897/27.8	911/26	970/15.4
Armco	2,936/45	2,640/(362)	2,927/118
Armstrong Rubber	NA	866/(37.6)	NA
Arvin Industries	821/35.9	995/41.2	1,373/47.6
Ashland Oil	7,891/147	6,991/208.6	6,993/161
Atlantic-Richfield	23,100/(202)	15,800/615	17,600/1,224
Armco	NA	NA	NA
Armstrong Rubber	NA	NA	NA
Ball Corp.	1,106/51.2	1,070/58.9	1,054/66
BASF/Inmont	2,568/38.9	3,645/104.6	NA
Bethlehem Steel	5,117/(196)	4,333/(152.7)	4,620/174
Borg-Warner	3,963/178	3,623/206.3	3,500/NA
Briggs & Stratton	717/33.5	745/34.1	785/26.6
Brown & Sharpe	120/6.3	137/(1.2)	152/(1.1)
Budd Co.	NA	NA	NA
Carpenter Technology	556/24.5	517/7.7	480/4.5
Caterpillar	6,769/198	7,321/76	8,180/350
Celanese	3,046/178	2,891/213	4,596/169
Central Foundry (GM)	NA	NA	NA
Champion Spark Plug	829/15.2	883.8/1.0	720/24.4
Cherry Automotive	26.9/(2.3)	22.7/2.7	14.6/7.4
Cincinnati Milacron	732/(44.7)	849/23.3	827/(79.9)
Clark Equipment	964/(85.4)	954/(60.6)	1,048/(16.6)
Colt Industries	1,579/138	1,616/89.3	1,642/75.0
Computervision	441(80.7)	495/(5.8)	564/19
Cross & Trecker	402/11.7	399/.189	422/(24.4)
Cummins Engine	2,146/50.3	2,303/(107)	2,767/13.8
Cyclops Corp.	1,385/26.2	NA	NA
Dana Corp.	3,754/165	3,695/117	4,142/132.9
Deere & Co.	3,163/31	3,516/(229.3)	4,134/(99.0)
Delco Electronics (GM)	NA	NA	NA
Delco Morraine (GM)	NA	NA	NA
Delco Products (GM)	NA	NA	NA
Delco Remy (GM)	NA	NA	NA
Diver. Prod. Oper.(Ford)	NA	NA	NA
Dow Chemical	11,537/58	11,113/732	13,377/1,240
Dow Corning	901/95.2	1,085/110.6	1,303/135
Dresser Industries	4,111/(196)	3,661/9.6	3,120/49
Dupont	29,483/1,118	27,148/1,538	30,468/1,786
Eagle Picher	641/(119.8)	648/38.8	677/39.9
Eaton	3,674/231	2,760/138	3,138/201
EDS	3,444/190	NA	NA
Emhart	1,775/80.5	2,094/(10.2)	2,454/106
Englehard	2,263/42.6	2,289/53.3	NA
Essex Chemical	190/8.5	205/8.8	NA
Ex-Cell-O	NA	NA	NA
Federal Mogul	895/44.7	941/29.1	1,075/36.5
Firestone	3,836/3.0	3,712/85	3,867/145
Fisher-Guide (GM)	NA	NA	NA
FMC Corp.	3,260/196.5	3,003/152.5	3,139/191
GenCorp.	1,457/75	1,537/130	1,619/475
General Electric	28,285/2,336	35,211/2,492	40,515/2,915
General Instrument	993/(9.6)	794/(46.8)	788/(80.3)
Gleason Corp.	228/.78	252/1.6	229/(1.3)
Goodyear	9,896/412	10,328/124	9,905/771
Gould	1,520/(175)	1,437/(101)	933/(95.6)

(Continued)

** — In millions of dollars. Figures taken from Fortune 500 and company reports.*
NA — No public listing or not available.

TOP SUPPLIERS 1988

COMPANY	1985 SALES*/PROFIT	1986 SALES*/PROFIT	1987 SALES*/PROFIT
Harvard industries	205/8.6	314/12	559/17
Hercules	2,587/133	2,615/227	2,693/821
Inland	3,186/(178)	3,173/19.3	3,453/145
IPC	116/NA	120/NA	123/NA
Intermet	265/13	295/19	317/21.4
ITT	14,663/294	17,437/494	19,525/1,018
J.P. Industries	133/6.4	234/10.8	386/14.8
Kaiser Aluminum	1,774/(190)	1,967/(39.8)	1,987/(362)
Lear-Siegler	2,370/101	2,464/55	NA
Litton	4,590/299	4,521/71	4,419/138
Loctite	240/19	266.8/23.2	337.8/30.7
LTV	8,198/(724)	7,271/(3,251)	NA
Lubrizol	903/60.2	985.2/78.2	1,022/81.3
Magna International	690/38	1,027/47	1,152/40
Mahle	NA	NA	NA
Masco	599.1/2.90	712/9.4	2,233/218
Maremont	NA	NA	NA
Midland-Ross	763/19.4	NA	NA
Mobay	1,599/77	NA	NA
Modine	312/20	349/19.7	395/25
Molex	253/31	292/32	387/43
Monsanto	6,747/(98)	6,879/433	7,639/436
Morton Thiokol	1,832/195	1,950/133	1,987/138
National Steel	2,082/(88.4)	2,128/(59.8)	2,416/47.8
Navistar	3,508/(364)	3,357/2	3,530/33
New Departure/Hyatt (GM)	NA	NA	NA
Norton	1,193/(130)	1,107/(33)	1,260/66.5
Owens-Corning	3,305/131	3,644/15.6	2,891/200
Phillips Pet.	15,676/418	9,770/228	10,721/35
PPG	4,345/303	4,687/316	5,183/377
Prab	19,374/(843)	22,003/(784)	19,591/(1.1)
Quaker State	974/46	899/50	NA
Quanex	297/10.1	325/(19.9)	345/5.2
Raychem	679/28	797.6/48.8	944.4/73.6
Rexnord	1,103/36	1,093/(104)	NA
Reynolds Metals	3,500/(292)	3,753/192	4,284/219.5
Rockwell	11,338/595	12,296/611	12,123/635
Sheller Globe	918/364	863/12.8	774/92
Sherwin-Williams	1,522/1.6	1,553/1.9	1,793/2.1
Simpson	139/7.4	171/9.9	147/5.3
Snap-On Tools	591/298	670/331	754/377
SPX (Sealed Power)	624/30	665/28.5	774/26
Stanadyne	484/30	493/21	NA
Standard Products	377/21.5	433/27.2	465/31.5
Stanley Works	1,006/78	1,371/78.7	1,763/86.6
Starrett	NA	123/12.7	169/15.8
Superior Industries	130/7.3	148/8.5	169/9.5
Tecumseh Products	829/60	821.1/50.2	951/71.6
Tektronix	1,438/90	1,352/39.3	1,396/51.2
Teledyne	3,256/546	3,241/238.3	3,217/377
Textron	4,990/252	5,023/244	7,200/256
3M	7,846/664	8,602/779	9,429/918
Timken	1,090/(4)	1,058/2.7	1,230/10.3
Trinova	1,233/74.6	1,447/122	1,681/75
TRW	5,917/(7)	6,036/218	6,821/243
USX	20,779/598	14,938/1,833	14,836/219
Union Carbide	6,390/(581)	7,828/496	6,914/232
Uniroyal-Goodrich	NA	NA	NA
United Technologies	14,991/313	15,670/73	17,170/592
Walbro	67/5	98/6.6	110/7
Weirton Steel	1,156/40	1,173/30	1,329/80
Wickes	2,806/28	477/84	2,148/83.7

** — In millions of dollars. Figures taken from Fortune 500 and company reports.*
NA — No public listing or not available.

LITTLE BIG PLANT

The new Mitsubishi-Chrysler plant re-writes the book on space efficiency.

By JOHN MCELROY

Like the other Japanese transplants, Diamond-Star is smaller, more efficient and cost less to build than any American assembly plant. In fact, considering how many cars it builds, it may be world's most space-efficient plant.

Total area under roof is 2.0 million ft^2. But if office and storage space is excluded, the actual production area is only 1.4 million ft^2! And this facility can build nearly 240,000 cars a year, including major stampings and plastic moldings.

The long, narrow layout of the plant has a lot to do with its small size. Mitsubishi believes that one long assembly line is the best because every U-turn in a line creates dead space that can't be used efficiently.

According to Yoichi Nakane, president of Diamond-Star (D-S), the plant represents a $650 million investment. A new American plant typically costs over $1 billion. And it's not as if D-S tried to scrimp and save to keep the price down. There are over 470 robots used in the plant, which is twice as many robots as you're likely to find anywhere else. All the robots are made by Mitsubishi Motors and Mitsubishi Electric.

"My financial people didn't have the same pressures that the financial people at some other companies have. They didn't cost-justify all 470 robots just on price—they justified them on quality," says Glen Gardner, chairman of D-S.

Diamond-Star's highly automated press shop uses more press lines than do its transplant competitors. There are two blanking presses and five Komatsu transfer presses to make 72 body panels which are two-side galvanized. This extra press line capacity will be used to make only two days' worth of parts, about one half the lot size typically used elsewhere.

As the blanks come off the blanking line, they are brought by AGVs to the press line. As the panels come off the line they are automatically stacked into pallets. The pallets are automatically stacked in a hi-bay storage area, then retrieved by AGVs to be whisked to the body shop. Except for a quick inspection at the end of the press line, the Nippon steel is untouched by human hands.

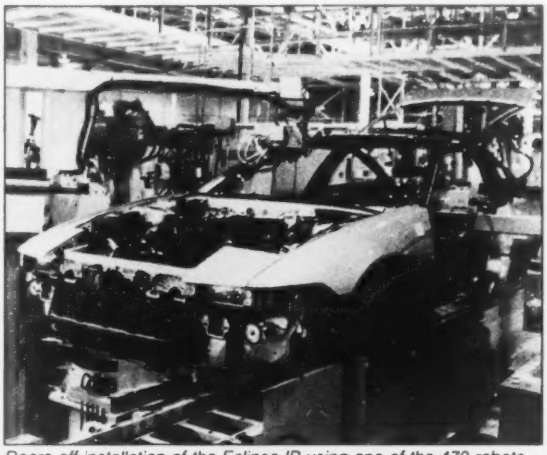
Next to the press shop is a plastics shop that makes six different types of bumper fascias on nine RIM machines.

About 90% of the welding at Diamond-Star is done by robot. There are 72 robots used for sealing alone. All locater pads on the welding equipment is hand-ground to spec. No shims are used. Either the body is welded to spec, or it doesn't go together at all.

Each body goes through a three-coat paint process, with the first coat of primer being dipped on, not sprayed. Every car is clear-coated, too. Unlike any other assembly plant *AI* has visited, there are no accumulator banks before or after the paint shop.

After leaving the paint shop, the doors, hood and liftgate are automatically removed. And this is where the robots are really put to work. They install the tires, seats, powertrain cradle, rear suspension, gas tank, battery, glass, IP, bumpers, doors, hood and liftgate. With so many robots being used, D-S is proceeding very carefully.

"If I tried to launch a plant with over 400 robots like Dick Dauch launches a plant with a launch curve like this," says Glen Gardner, moving his hand as if it were a Saturn V rocket blasting off, "I'd be in trouble." AI



Doors-off installation of the Eclipse IP using one of the 470 robots.

DIAMOND-STAR vs. FLAT ROCK PLANT COMPARISON

LOCATION:	Bloomington-Normal, IL	Flat Rock, MI
PRODUCTS:	Chrysler Laser/ Mitsubishi Eclipse	Ford Probe/ Mazda MX-6
INVESTMENT:	$650 million	$550 million
PLANT SIZE:	2.0 million ft^2	2.7 million ft^2
LINE SPEED:	62 cars/hour	68 cars/hour
CAPACITY:	238,000 cars/yr	261,000 cars/yr
ROBOTS:	470	350
EMPLOYMENT:	2900	3100
MAN HOURS PER CAR:	23.3	22.7

CHILTON'S
TRUCK & OFF-HIGHWAY INDUSTRIES

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The big truck honeymoon is over, says John Stark

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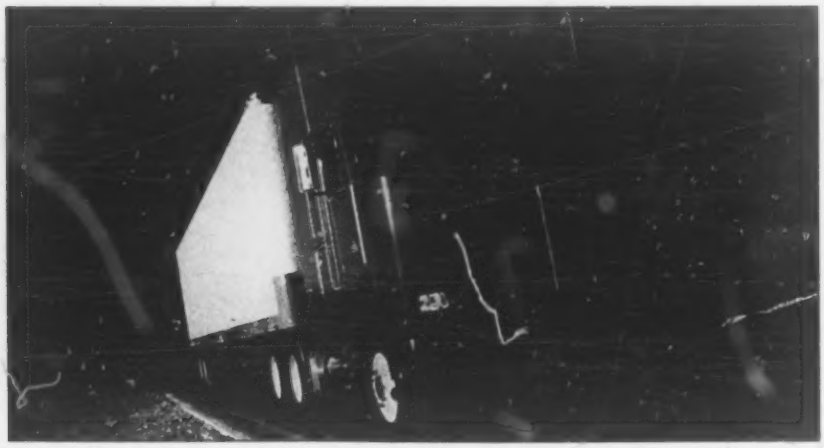

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NEXT ISSUE

In January, T&OHI features the latest on heavy truck design.

For Trucks, The Party's Over

by John Stark

The party is nearly over...for manufacturers and suppliers in the commercial truckmaking business.

Soaring US demand for medium and heavy-duty trucks will soon run out of steam.

Officials believe retail sales of Classes 3-8 trucks will peak by 1988 yearend at about 345,200 units, and decline thereafter during the next three to five years.

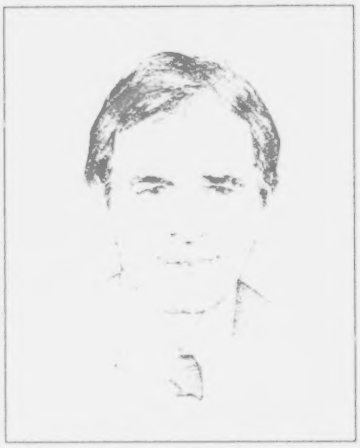
Mack, Freightliner and others see 1989 demand for Class 8 trucks falling anywhere from 5½% to 13%. Class 3-7 truck sales will likely drop by 4½%. Blame for overall truck sales slowdown is linked to outlooks of slowdown in growth of the US GNP.

Hence, truck industry upturn in the post-1980 deregulation period is seen coming to an end next year after peaking this year at the highest level since 1979 when 390,189 trucks were sold.

However, trucking deregulation dramatically shook up industrywide buying patterns during this period of economic growth. Coast-to-coast trucking fleets turned to the use of regional hubs to serve their business accounts, under trucking deregulation.

Big trucking fleets subsequently no longer needed high COE Class 8-type trucks with 400 horsepower or more. Reduced travel distance, laws permitting the use of wider and longer truck-trailer combinations, and 55 mph speed limits altered market buying.

High COE, 400 hp trucks quickly fell from grace in the marketplace. Demand shifted to medium- and long-nosed, 250 hp Class 7-8 conventionals.



John Stark is editor and publisher of Stark's Off-Highway Ledger.

Kenworth is generally regarded as the first truckmaker to identify the changing trucking needs with the late 1985 launch of a new line of conventional trucks – Baby 8s. Its T600A model long-nose set the standard for others that followed a year later.

Not only did nationwide trucking deregulation swiftly change the course of business events for Class 8 commercial vehicle makers, it also sent component suppliers back to the drawing board for new families of parts.

Cummins, for example, came to the market with a new family of 10-L diesel engines that quickly became popular specification items. Caterpillar and others followed suit, prompting similar changes in drivetrain design.

Suppliers of cabs and various cab parts were especially affected by the shift to conventional from COE-type trucks. However, the three-year gain in conventional truck demand may have already run out of steam. Through 1988, US market penetration of COE-type vehicles has rebounded to nearly 27% of overall retail sales, the highest level since 1985.

Some truck industry insiders see resurrecting demand of COE-type vehicles, as well as alternating rise and fall in net incoming orders for heavy trucks since March 1988, as signs that Baby 8 truck business will surely wane next year by as much as 9½%.

The $64,000 question for commercial truckmakers is not whether a downturn looms but rather, what will be the *extent* of downside in the business cycle. Will US truck sales decline during the next two to three years and rebound afterwards? Or will the drop be marginal in nature and remain relatively flat through the next five years?

"To tell you the truth, opinions within Freightliner are divided in that regard," says Ernst Stoeckl, Freightliner president and CEO. "We believe that during the next five years, we'll see a decline (in industrywide truck sales), followed by a recovery, but not to the 144,000 unit level of 1988. We foresee the market fluctuating within a narrow band, to a minimum of 105,000 and a maximum of 130,000 units beyond 1989."■

U.S. MEDIUM & HEAVY-DUTY TRUCK SALES OUTLOOK

	1989	*1988*	*1987*	*1986*	*1985*	*1984*	*1983*	*1982*	*1981*	*1980*
Class 3	13,500	13,900	14,009	12,758	10,854	6,019	145	1,062	748	3,510
Class 4	26,000	22,300	2,129	768	--	4	2	9	12	195
Class 5	8,000	8,000	8,185	6,505	5,081	5,417	1,159	1,434	1,916	2,309
Class 6	51,000	55,000	44,282	45,046	48,358	55,482	46,532	44,214	71,993	89,764
Class 7	94,000	102,000	102,583	100,713	96,973	78,479	59,383	62,488	51,402	58,436
Class 8	130,000	144,000	131,156	112,871	133,581	137,693	81,647	75,777	100,334	117,270
TOTAL	322,500	345,200	302,344	278,661	294,847	283,094	188,868	184,984	226,405	271,484

Source: U.S. Motor Vehicle Manufacturers' Association.
Note: 1989 and 1988 data represent forecasts, subject to revision.

NO BLITZKREIG

Medium import trucks have gained a growing beachhead, not a knockout invasion.

By KEN KELLEY

Medium-duty imported trucks are doing rather well in the US market. A sales increase estimated by *AI* in the 7% range is nothing to be ignored at a time when the worldwide truck market has more than its share of soft spots.

However, the imports aren't doing so well when they face the inevitable comparison—how do they shape up against medium-duty (Classes 4-7; 14,001 lb-33,000 lb GVW) sales by the domestic producers?

The Motor Vehicle Manufacturers Assn. (MVMA) has released retail sales figures which show the domestics enjoying a sales gain of nearly 22%. The sales of domestic-badged, foreign-made mediums, such as Ford's Cargo models from Brazil and PACCAR's Volkswagen do Brazil-built trucks, are included in the MVMA tally but not in the *AI* import estimates, because they seem more 'domestic' than import to most people in the business.

Good response to new import models, many of which were introduced in the spring or early summer of 1988, is getting credit for much of the sales increase the foreign makes are enjoying. The foreign makes are doing well as niche marketers, offering specialized models that appeal to only small groups of truck users.

And several of the Japanese companies are predicting that they will be doing even better come next spring, when they will benefit from new specialized models added at the traditional introduction time in Japan.

This report is based on retail sales of foreign suppliers of medium-duty straight trucks: Hino, Isuzu, Mitsubishi Fuso and Nissan Diesel of Japan; Iveco, an offspring of Italy's Fiat, Mercedes-Benz of Germany . Where a manufacturer was willing to release actual sales figures, they were used. Other totals were estimated by *AI* based on 1988 model year sales so far.

Highly specialized models such as cutaway chassis on which delivery van bodies are mounted and tractors, products on which foreign makers are just now selling here, were not included.

A combination of manufacturers' sales figures and the estimates shows that medium duty sales of the six producers in the first nine months of this year totaled 8744 units, up 7.1% from the 8162 medium trucks moved in the comparable period of 1987.

MVMA's report on nine-month sales of medium models from the domestic producers and their overseas sources showed 1988 action at 142,086 trucks, up 21.8% from the 116,674 unit total for 1987.

The recent past has seen a rush to add models with GVW ratings like 32,600 lb and 32,900 lb, with several included in the spring 1988 additions.

Left: Iveco trucks are now clustered toward the bottom of the medium-duty range. Middle: Sales to fleets are a major assist to foreign producers of mediums, such as Budget Rental's big purchase of Isuzus. Right: The Mercedes-Benz line relies heavily on short-nosed conventional trucks.

That's because a stiff federal excise tax on heavy trucks starts at 33,001 lb GVW. A truck with a 32,900 lb rating can do almost as much work and, without the excise, costs thousands of dollars less.

At this point, all medium-duty imports being discussed have at least one 32,000 lb model with the exception of Iveco which does not offer trucks in the light-heavyweight range in the US.

Domestic factories and their overseas sources also produce models that take a marketing advantage of this loophole.

Extreme specialization and tough competition characterize everything in the medium truck game. The imports made their original splash in Classes 4 and 5 because US producers had little in this size range and nothing with diesel power.

This has since changed. A very popular addition to the Ford line in 1987 was the F Super Duty, a Class 4 offering. A diesel-powered delivery chassis was added six months later.

Several of the Japanese marques are making big moves into Class 3, for light trucks with GVW ratings in the 10,001 lb-14,000 lb range. Formerly a preserve for US trucks, the class now has stiff Japanese competition – so much so that one import executive asked why Class 3 could not be included among medium trucks for purposes of this article. MVMA sets the classes for everyone.

Most of the import truckmakers hint that exciting new models are just around the corner but shy away from discussing details ahead of introduction time. Many of the hints indicate that more special models for niche markets are coming.

Things are a little different at Nissan Diesel America. They want to talk in hopes of getting the company name straight. This is the truck and diesel engine company which shares the Nissan name with the car company that also offers light trucks.

At Nissan Diesel America, Dale Weatherall, a spokesman, says the firm plans to add two new models in the spring of 1989. Both will fall in the GVW range already served by the line.

A hope, Weatherall says, is to carve out another successful niche such as the car-towing and recovery market in which some operators now use Nissans exclusively in fleets of 20 to 30 units.■

US Market Imported Medium-Duty Trucks

Maker	Model	Top GVW Rating (lb)
Hino	FB series	16,500
Hino	FD series	22,300
Hino	FE/FF series	30,000
Hino	SG series	32,900
Isuzu	NRR series	18,000
Isuzu	FSR	22,000
Isuzu	FTR	29,700
Isuzu	FVR series	32,900
Iveco	Euro 220 and Turbo	14,800
Iveco	Euroturbo 230	16,900
Iveco	Euroturbo 325/340	18,900
Iveco	Euroturbo 435/450	22,800
Mercedes-Benz	L-1117/L-1319	30,000
Mercedes-Benz	LP-1219/LP-1419	32,900
Mitsubishi-Fuso	FH 100	17,196
Mitsubishi-Fuso	FK 415	23,000
Mitsubishi-Fuso	FK 455	28,000
Mitsubishi-Fuso	FM 555	32,600
Nissan Diesel	UD 1800	17,640
Nissan Diesel	UD 2000	19,840
Nissan Diesel	UD 2600	26,000
Nissan Diesel	UD 2800	27,560
Nissan Diesel	UD 3000	29,760
Nissan Diesel	UD 3300	32,900
Volvo	FE6	30,000
Volvo	FE7	32,900

All above models are COE except L-model Mercedes, which are short-nosed conventionals.

Medium-Duty Imported Truck Nine Month Sales, 1988 vs. 1987

Company	1988	1987
Hino	1,555 *	1,460
Isuzu	1,506 *	1,081
Iveco	1,893	2,060
Mercedes-Benz	2,323	2,892
Mitsubishi-Fuso	2,150	1,084
Nissan Diesel	1,514 *	1,173
Volvo	1,259	1,476
Totals	10,941	9,750

*AI estimate

Nissan Diesel America now calls all models in its growing line UD trucks.

Urban delivery work is a prime application of the medium trucks from overseas, such as this Mitsubishi Fuso.